ABSTRACT

Presented at American Association of Cardiovascular and Pulmonary Rehabilitation, 2006

Relationship between Brain Natriuretic Peptide and Heart Failure Symptoms

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Introduction: Brain Natriuretic Peptide (BNP) has become an important clinical variable in the heart failure (HF) population. Several previous investigations have clearly demonstrated the diagnostic and prognostic value of BNP in patients with HF. The relationship between BNP and symptoms associated with HF has not been thoroughly investigated. The purpose of the present study is to examine differences in BNP level based upon subjective symptoms.

Methods: 1,141 (696 male/445 female) clinic visits to a HF collaborative care program were included in this analysis. Mean age of the group was 77.1 (±8.8) years. Brain natriuretic peptide (BNP), paroxysmal nocturnal dyspnea (yes/no), shortness of breath (improved/unchanged/increasing) and appetite (good/fair/poor) were collected during clinic visits. Symptoms were assessed by a Nurse Practitioner, under the direction of a cardiologist, prior to the initiation of any therapy during that visit. Unpaired t-testing was used to assess differences in BNP between symptoms with two categories. One-way analysis of variance (ANOVA) was used to assess differences in BNP amongst symptoms with three categories. Tukey's post-hoc test was used to compare groups when the ANOVA detected a significant difference. Statistical tests with a p-value <0.05 were considered significant.

Results: Subjects with paroxysmal nocturnal dyspnea had a significantly higher BNP level compared to subjects who did not report paroxysmal nocturnal dyspnea [1260.0 (±1358.8) vs. 973.6 (±973.6) pg/ml, $p<0.001$]. Subjects with increasing shortness of breath [1076.9 (±1257.5) pg/ml] had significantly a higher ($p<0.04$) BNP level compared to those subjects with unchanged [891.1 (±1002.2) pg/ml] or improved [802.6 (±778.4) pg/ml] shortness of breath. Subjects with a good appetite [752.6 (±919.5) pg/ml] had significantly lower ($p<0.04$) BNP level compared to those subjects with a fair [1045.5 (±1140.2) pg/ml] or poor [1167.4 (±1395.1) pg/ml] appetite.

Conclusions: The results of the present study demonstrate a link between subjective symptoms associated with worsening HF and elevated BNP levels. Consideration of this link by clinicians assessing patients with HF may be warranted.